

Appl. No. 09/291,227  
Atty. Docket No. P-114  
Reply to Office Action of July 16, 2003  
Customer No. 27752

### REMARKS

Claims 1 and 3 - 11 are pending in the present application.

The Examiner has rejected the claims based on 35 U.S.C. § 103(a) in view of Ito *et al.*, U.S. Patent No. 5,937,790 ("Ito"). Ito relates to compositions containing L-ascorbic acid-2-phosphoric acid or L-ascorbic acid-2-glucoside as active ingredients for the alleviation of stress in animals. Ito states that these agents are readily susceptible to oxidation, and thus decomposition, and are swiftly deactivated after being added to feed. Ito therefore includes an antioxidant substance selected from carotene, astaxanthin, lutein, dl-alpha-tocopheryl acetate, alpha-tocopherol, SOD, glutathione, and catechins in the composition in order to prevent or inhibit oxidation of the active thereby enhancing its efficacy as an anti-stress agent. Nowhere does Ito teach or even suggest that any of the antioxidants, and lutein in particular, are useful for the enhancement of immunity or for any purpose other than preserving the structural integrity of the active ingredient.

The Examiner states that Ito administers compositions containing carotene and lutein. The Examiner further draws from Column 1, lines 23 - 25, which states that the anti-stress agent of Ito can prevent the stress reaction of animals and inhibit various disorders accompanying the stress, such as loss in body weight and a reduction in immunity.

However, respectfully, Ito relates only to animals which are stressed. For example, Example 1 of Ito tests swines which are transferred to a separate swine house to induce stress. Ito states that "[i]t was confirmed from past experience that this transfer and change of group formation imposes stress on swine and causes problems such as a reduction in incremental body weight." See Ito, Column 9, lines 52 - 61. As yet another example, Example 2 of Ito tests cattle in which the "bulls in the test segment and the control segment were transported on land over a distance of 567 km by trucks at the initiation of the test . . ." See Ito, Column 12, lines 15 - 18. As yet a further example, Example 3 tests beagles which are "performed by breeding the beagles in an open stock-raising house installed in the fields in a high temperature season of summer from August 1 to 30 in 1995. The temperature of the raising house was not particularly controlled." See Ito, Column 12, lines 61 - 65. No other mammalian tests are described.

Ito relates the described compositions to prevention of the stress reaction and inhibition of various disorders accompanying the stress, such as a loss in body weight and a reduction in immunity. See Column 1, lines 23 - 25. Nowhere does Ito describe actual *enhancement of immunity*, either in healthy or stressed animals. *Importantly, the Examiner is assuming that*

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*alteration of measured stress proteins results in changes in immune response, however, this is not demonstrated by Ito. Moreover, the Examiner is equating inhibition of reduction in immunity with enhancement of immunity. This is not demonstrated by Ito.*

Moreover, Ito fails to describe or even suggest treatment of healthy, unstressed animals. Again, Ito is merely focused on combating the effects of a stress condition. Applicant has demonstrated the effects of the compositions described in the present application, which effects were discovered based on use of healthy animals under non-stress (or, ordinary) conditions.

Furthermore, as has been stated above, Ito relates to compositions containing L-ascorbic acid derivatives as the anti-stress agent. Ito states that these agents are readily susceptible to oxidation, and thus decomposition, and are swiftly deactivated after being added to feed. Ito therefore includes an antioxidant substance selected from carotene, astaxanthin, lutein, dl-alpha-tocopheryl acetate, alpha-tocopherol, SOD, glutathione, and catechins in the composition in order to prevent or inhibit oxidation of the active thereby enhancing its efficacy as an anti-stress agent. *Nowhere does Ito teach or even suggest that any of the antioxidants, and lutein in particular, are useful for the enhancement of immunity or for any purpose other than preserving the structural integrity of the active ingredient.*

Rather, Ito relates to L-ascorbic acid derivatives as the anti-stress agent. Lutein may optionally be selected among a variety of antioxidants (carotene, astaxanthin, lutein dl-alpha-tocopheryl acetate, alpha-tocopherol, SOD, glutathione and catechins) *in order to intensify the suppression of animal stress plasma LDH, MDH and AspAT and stress proteins, as these antioxidants can preserve the structural integrity of the ascorbic acid derivative.* Ito does not expressly or impliedly suggest that any of these antioxidants actually contribute to the anti-stress action of the composition in any animal (whether stressed or not), other than for preservation of the ascorbic acid derivative which is responsible for this action. See e.g., Column 1, lines 50 – 63.

Ito therefore fails to teach or even suggest enhancement of immunity in a cat or dog using lutein, particularly in healthy animals under non-stress conditions. Respectfully, the rejection based on Ito should be withdrawn.

The Examiner has further rejected the claims based on 35 U.S.C. § 103(a) in view of Ito *et al.*, U.S. Patent No. 5,937,790 ("Ito"), in combination with Jyonouchi *et al.*, "Immunomodulating Actions of Carotenoids: Enhancement of *In Vivo* and *In Vitro* Antibody Production to T-Dependent Antigens," Nutrition and Cancer, Vol. 21, No. 1, pp. 47 – 58 (1994) ("Jyonouchi"), Anon (IDS, March 22, 2002) ("Anon"), and Krinsky, "Effects of Carotenoids in

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Cellular and Animal Systems," Am. J. Clin. Nutr., Vol. 53, 238S - 46S (1991) ("Krinsky") and CRC Handbook of Toxicology.

It is noted that in re-presenting this rejection, with respect to the secondary references, the Examiner has not addressed the arguments previously presented by Applicant.

The deficiencies of Ito are argued as above. One of the secondary references, Jyonouchi, teaches that the intraperitoneal injection of lutein in mice in specific amounts may enhance humoral immune response in mice. The reference fails to teach or suggest any injection of lutein in any animal other than mice, and fails to teach or suggest oral administration of lutein in any animal for any purpose.

In order to establish obviousness, the Examiner must consider whether the claimed invention *as a whole* would have been obvious in view of the cited references. Consistent with this requirement, distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter as a whole. See MPEP 2141.02. As such, each and every element of the claimed invention must be considered when determining whether a collection of references would have suggested the invention as a whole.

In this instance, respectfully, the Examiner is improperly disregarding the claimed invention as a whole. A reading of each of the four independent claims of the invention, namely Claims 1, 9, 10, and 11, reveal that the claimed invention recites processes for enhancing immune response of a dog or cat (or increasing lutein concentration, immunoglobulin concentration, or lymphocyte cells) utilizing a diet which contains a very specific amount of lutein. In particular, the claims require the diet to contain from about 1 to about 50 mg/day of lutein. This is a claim limitation that should not be ignored while examining the present claims.

Indeed, reading the claim as a whole, including all limitations, is important in view of the cited combination of references. A combination of Ito with Jyonouchi fails to arrive at the present invention for several reasons. First, as supported by the declaration previously submitted, one of ordinary skill in the art would have failed to infer from the combination of references that lutein would be absorbed at effective levels following oral administration so as to have the claimed effect on the immune system and immune response in a cat or a dog. Indeed, since Jyonouchi only shows humoral immune response in mice by intraperitoneal injection, and Ito merely states that an antioxidant chosen from a laundry list of actives which mentions lutein can be fed orally to protect against degradation of the described active agent, one of ordinary skill would have failed to deduce that immune response could be enhanced in dogs or cats through oral administration in feed. Even further, an even assuming *arguendo* that one would be led to enhance immune

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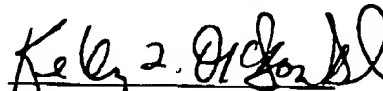
response in dogs or cats through oral administration of lutein, one of ordinary skill would have no understanding or basis for selecting the appropriate, effective amount of lutein in the diet. Indeed, each independent claim of the invention as presently claimed requires from about 1 to about 50 mg/day of lutein in the diet in order to effect the recited functional response, which is not taught or even suggested in either Ito or Jyonouchi. Moreover, the remaining secondary references fail to fill this important gap. If the Examiner persists with the present invention, the Examiner should clearly show that each and every element of the claimed invention is taught through the combination of references.

Accordingly, since the references cited by the Examiner fail to teach each and every element of the claimed invention, the Examiner has failed to establish obviousness. The rejection is therefore improper and should be promptly withdrawn.

#### CONCLUSION

Applicant therefore respectfully requests that the Examiner withdraw the rejections under 35 U.S.C. § 103(a) and allow Claims 1 and 3 - 11 as amended and otherwise presented herein. If the Examiner believes that personal contact would be beneficial for disposition of the present application, the Examiner is respectfully requested to contact the undersigned.

Respectfully submitted,



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October 8, 2003

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